

**Year 23 (2010–2011) Annual Report  
University of California Transportation  
Center  
Director: Robert Cervero  
(08/1/10–07/31/11)**



2614 Dwight Way 2d Floor,  
University of California Berkeley CA 94720-1782  
510 642-1695  
inquiries@uctc.net  
www.uctc.net



## DISCLAIMER

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated under the sponsorship of the Department of Transportation, University Transportation Centers Program, in the interest of information exchange. The U.S. Government assumes no liability for the contents or use thereof.

## ABOUT UCTC: OUR 23rd YEAR

The University of California Transportation Center (UCTC) is a multi-campus organization headquartered on the UC Berkeley campus. UCTC carries out basic and applied research, published in journals and on the Center's web site. We organize and participate in conferences and workshops to discuss our research findings, inform public policy, and identify new and emerging research needs. We work with international, national, state, regional and local agencies and private organizations to put our research findings into practice. We offer fellowships and mount new courses to entice the best students into careers in transportation. We support education programs of UC academic departments offering transportation degrees, run training sessions, lectures, and symposia for practitioners, and publish a magazine designed to communicate our work to a broad nontechnical audience. The UCTC designated campuses are UC Berkeley, UC Irvine, UCLA, UC Riverside, and UC Santa Barbara. We are funded by the US Department of Transportation and the California Department of Transportation.

2010-2011 was UCTC's 23rd year as the Federal Region 9 University Transportation Center (UTC). On the research front, a total of 19 new faculty initiated projects were started in 2010-11, and another 16 projects were carried forward from the previous year. A total of 30 faculty research reports were submitted during 2010-2011.

In addition, 6 doctoral dissertation grants were awarded and 106 students completed transportation-related graduate degrees across the UCTC campuses (86 masters and 20 doctorate degrees). Our graduates have joined private transportation firms, universities, nonprofits, and federal, state, and local government agencies.

UCTC undertook a number of educational and tech transfer activities, supporting the UCLA Lake Arrowhead conference, the UCTC student conference held this year at Berkeley, two special educational programs targeted at undergraduates and young professionals, and various activities of the Transportation Research Board. UCTC also partnered with Caltrans and California University Transportation Centers (UC Davis, USC, San Jose State, the Leonard Center for California State Universities) on a series of webinars aimed at practitioners that focused on research funded by the California UTCs.

Of note, faculty members and graduate students affiliated with UCTC presented numerous papers at sessions of the annual meeting of the Transportation Research Board in January 2011. Also, the TRB Charley V. Wootan Award for Outstanding Ph.D. Dissertation in Policy and Planning was given to Gian-Claudia Sciara, University of California Berkeley, for the dissertation, "Planners and the Pork Barrel: Metropolitan Engagement in and Resistance to Congressional Transportation Earmarking," which was supported by a UCTC dissertation grant. Another UCTC student, Colleen Callahan, a master's student in the UCLA Department of Urban Planning, won the Neville A. Parker Award for Outstanding Non-thesis Masters Degree Paper in Policy and Planning for her report, "The Plane Truth - Air Quality Impacts of Airport Operations and Strategies for Sustainability: A Case Study of

the Los Angeles World Airports."

The future of University Transportation Centers is uncertain at this time. Without a new federal transportation bill and in light of the nation's continued fiscal struggles, whether the UTC program and its regional centers will continue in the future is unknown. There was a FY 2011 re-competition for UTCs which UCTC competed for in hopes of re-establishing itself as the nation's Region 9 UTC.

Regardless of these uncertainties, UCTC is committed to help develop improved transportation services, more cost-effective and efficient project delivery, better transportation- - environmental performance, and more equitable distribution of transportation benefits. Research on these topics helps find new processes, new technologies, and new institutional designs that pay off for all of us. Equally importantly, UCTC's funding attracts the best and the brightest into the transportation field, helping to produce the leaders of the future. Transportation is an exciting and crucially important field, and in this regard UCTC remains committed to advancing knowledge and informing practice to promote efficient, sustainable, and socially just transportation systems of the future.

—Robert Cervero,  
September 2011

## **1. UCTC VISION AND THEME**

### **1.1 Vision**

UCTC's vision is excellence in transportation education, excellence in transportation research, and a vibrant network of transportation professionals who will put their education and research findings into practice. We recognize that the State of California, Region 9, and the nation face important transportation challenges, among them:

- adjusting transportation services to respond to changes in demographics and activity patterns
- meeting the challenges of a changing economy and changing resource costs and prices
- managing our extensive transportation systems more efficiently
- improving intermodal connections
- providing high-quality freight transportation responsive to new patterns of production, consumption, and costs
- more effectively assessing, communicating, and managing the social, economic, and environmental consequences of transportation programs and projects
- more effectively identifying applications for new technologies that can improve transportation systems performance
- reducing unwanted effects of transportation including congestion, pollution, and global warming
- improving the equity of transportation programs and projects
- assuring that the public health effects of transportation are positive
- moving toward sustainable transportation and land use relationships
- designing better processes for the involvement of diverse public and private interests in transportation planning, decision making and deployment
- developing efficient and equitable mechanisms for transportation finance
- identifying more flexible, innovative, and responsive organizational frameworks for transportation planning and implementation.

We believe that the challenges confronting the transportation sector must be addressed through creative research, development, and deployment, education and tech transfer, all under a broadly scoped but strategically organized research agenda, or theme, that can make our vision a reality.

## **1.2 Theme**

UTCs are asked to identify a theme, and the UCTC theme is “Transportation Systems Analysis and Policy.” This theme is at once broadly scoped and strategically focused, allowing us to conduct research that addresses the variety of challenges facing our nation, region and state and find ways to promote effective implementation, while complementing rather than duplicating other technology-oriented programs at UC such as PATH and the UC Pavement Research Center. This theme has guided UCTC research since the Center’s very beginning, reflecting the breadth of knowledge in the transportation field found throughout the five UC campuses affiliated with UCTC and the instincts of faculty researchers to link technical analyses to contemporary policy concerns.

The development of new methods and approaches for transportation forecasting and analysis, explorations of alternative policy approaches, and evaluations of existing policies and programs are examples of the kinds of projects that UCTC supports. Our researchers come from a variety of disciplines, including urban planning, engineering, economics, political science, computer science, policy studies, management, public health, environmental studies, geography, history, psychology, sociology, and the natural sciences. Increasingly, both our projects and the researchers themselves are multi-disciplinary. We emphasize surface transportation modes (highways, rail, etc.) rather than air or maritime transportation, but we support intermodal research involving the air and water modes if it has significant surface transportation components. Both passenger transport and freight transport topics are investigated through the UCTC.

## **2. OVERVIEW OF UCTC ACTIVITIES**

In accordance with federal UTC program requirements, UCTC carries out an active program of research, educational and student support, and tech transfer – all made possible by strong institutional support from Caltrans and the University of California as well as USDOT.

### **2.1 Research**

Research is a major focus of UCTC’s activities. UCTC research is framed by a clear research agenda, selected through peer review, structured as one-year grants, and awarded to PIs on a one project at a time basis. All UCTC research grants are awarded through a process that is framed by our theme of systems analysis and policy and guided by specific research priorities called out from time to time by the Executive Committee, our sponsors, and our advisory board.

Our policy is to provide one-year research grants with a report due at the end of the year. Multi-year projects can be proposed but must be structured to produce a publishable report every year, and a proposal must be submitted and evaluated for each additional year. Proposals involving faculty from multiple UC campuses are particularly encouraged.

At Caltrans’ request to all UTCs in California, we have a policy to implement a “one project at a time” rule, i.e., no Principal Investigator may have more than one incomplete project at any time. For example, faculty who submitted proposals for the current year had to have completed their prior year’s work to be eligible for funding support.

UCTC's success in research relies upon a carefully managed solicitation and project selection process. For faculty research, the procedure for project awards is as follows.

### ***Research Solicitation Process***

UCTC makes research project awards either to individuals or to teams of researchers. The Principal Investigator must be a faculty member within the UC System; researchers from universities outside UC may be included through a subcontract with the PI's campus.

The UCTC request for proposals (RFP) is maintained on our Web site. About two months before proposals are due, we send an email notification to faculty members on our associates list as well as to deans, department heads, and research directors for circulation to their faculty. UCTC's Associate Directors from the five campuses also notify faculty affiliates at their individual campuses.

Each proposal must be prepared in two parts. Part A is a description of the proposed research. Part B includes the vita of the principal investigator, a summary of accomplishments from the applicant's recent UCTC research grants (if any) including a list of working papers and other publications produced, and a statement identifying any research finding from other organizations for work on the topic of the proposal. (Multiple sponsors are encouraged, as they expand the feasible scope of the research that can be supported with UCTC funds.) An itemized budget is also included in Part B. Proposals are submitted by email and reviews also are completed electronically.

Due to high demand for UCTC funding, budget restrictions were put in place a decade ago and are applied in any year when funds actually received (after RABA or any other adjustments) fall short of authorization levels by more than ten percent. Under the restriction policies, summer salary for faculty is limited to one month and most projects are limited to one graduate student researcher or undergraduate intern per faculty member for the academic year. Costs of supplies, postage, computer expenses, travel, etc. are limited to amounts specified in the RFP unless additional, itemized expenses were justified as necessary for the conduct of the research. Secretarial and clerical support services are not allowed.

### ***Research Proposal Review Process***

All faculty research proposals undergo confidential single-blind external review by transportation experts - university researchers and practicing professionals. The UCTC Director selects three or four persons to review each proposal; a minimum of two, and preferably three, completed reviews are required for each proposal, with at least one from a Caltrans representative. Additional reviewers are sought if those initially contacted are unable to complete their reviews in a timely fashion. Recent experience is that it takes 3-4 requests to get two timely reviews.

Reviewers are chosen based on their expertise with the subject matter of the proposal. A reviewer list of over 200 individuals is maintained and includes experts from universities, government (the US DOT, other federal agencies, Caltrans, other state agencies, regional agencies, local governments, nonprofits (research groups, foundations) and private for-profit organizations. Faculty members, advisors and sponsors are asked to provide additional names of reviewers from time to time, so that the list is regularly updated.

External reviewers are asked to rate the proposals excellent, very good, good, fair, or poor and to consider the following in their written evaluations:



- Extent to which the proposed research is original or creative and an important intellectual contribution to transportation scholarship
- Extent to which this research will advance professional practice or inform public opinion
- Appropriateness of the research methodology to the research question
- Appropriateness and feasibility of the data collection plan
- Any other issues the reviewer deems important.

The Director and staff review the staffing plan and budget for compliance with UCTC rules, and consider the reasonableness of any special budget requests (e.g., additional direct expenses such as travel costs, survey costs, testing, etc.)

### ***Project Selection Process***

Reviews are compiled and reviewed with Caltrans. UCTC staff members also review each PI's past performance on UCTC-funded projects (if any) and evaluate the overall fit of the proposed work to the UCTC theme. The UCTC Director then uses the reviews, the outside experts' recommendations, and the staff reviews in making the final selection of projects for funding. In making the final choices, the Director also takes into account the desirability of continuing an ongoing research project into a second phase, versus initiating research on a new topic of importance.

The Director may require changes on some proposals, for example, to fund selected tasks only or to seek revisions in response to reviewers' comments. Further, the Director may provide "seed funding." These small grants allow a researcher to begin the investigation of the research topic and further develop the ideas and approach, with the possibility of applying for additional funds in later years.

### ***Research Performance Tracking***

The UCTC Director and administrator monitor research performance through periodic progress reports as well as through informal communications with researchers. We expect UCTC-funded researchers to publish their results, and consider their publication record in any subsequent applications for UCTC funding. We also provide funding for researchers (both as part of grants, and as funds allow, from UCTC headquarters funding) to present their work at conferences and symposia, reprint papers sponsored by UCTC, and publish research in the form of working papers, and final reports, web page postings, ACCESS magazine articles and UCTC policy briefs.

The academic value of UCTC-supported research is evidenced by:

- publication in peer-reviewed journals
- academic awards
- citations in the literature
- invitations to organize and participate in important conferences and meetings
- requests for guest lectures
- requests for collaborative research and exchanges.

Our success in producing innovative, policy-relevant results is demonstrated by their use in practice. We count these indicators of the success of our transportation research:

- adoption of UCTC-developed analysis methods
- use of UCTC-developed databases
- appointment of UCTC researchers to important policy-making and advisory positions
- invitations for UCTC researchers to testify before elected and appointed officials (Congress, the state legislature, city councils, county boards of supervisors, transit boards)

- requests for UCTC researchers to participate in meetings, briefings, and other collaborative activities and exchanges
- requests for UCTC researchers to provide technical assistance to government or the private sector
- changes in federal, state, regional and local transportation policies following recommendations based on UCTC research
- incorporation of UCTC research findings into governmental regulations, rules, and policies.

## **2.2 Educational and Student Support**

UCTC not only carries out research but also contributes to transportation education through fellowship programs, funding for course and curriculum development, our competitive PhD dissertation grant program, and the research assistantships offered as part of faculty research projects. Our objective is to help produce a vibrant network of transportation professionals who will put their education and research findings into practice. More details are provided in the following sections.

### ***Education Programs***

Formal programs and concentrations in transportation are currently offered by UCTC-affiliated departments at the UC campuses at Berkeley, Davis, Irvine, Riverside, Los Angeles, and Santa Barbara. Additional courses with significant transportation content are offered at other campuses of the UC system, including San Diego. Most UC transportation degree programs are in civil engineering or city planning. However, other departments including architecture, chemical engineering, computer science, economics, electrical engineering, energy resources, environmental studies, geography, landscape architecture, law, management, mechanical engineering, operations research, political science, public policy, sociology, and urban design now include transportation topics in one or more courses. The growth in transportation offerings and in the inclusion of transportation topics in a variety of courses reflects the increased faculty interest in transportation, for which UCTC can take considerable credit.

As a research unit, UCTC does not itself offer courses, admit students, hire faculty, or award degrees; instead, we provide support to the academic departments and units that carry out these functions in the UC system. This support is provided by application to the UCTC Director. Grants are typically under \$20,000. Eligible activities include (in order of priority): 1) the development of a new, permanent course or curriculum, 2) the major revamping of an existing course or course sequence to incorporate new materials or new teaching approaches, and 3) occasionally, special seminars taught by visiting scholars, leading practitioners, or other temporary appointees that offer especially valuable opportunities for students to be exposed to new ideas and approaches. Both graduate courses and undergraduate courses in transportation have received UCTC support. UCTC will not support a new course for more than three years nor will UCTC support the redesign of an established course more often than once every six years.

In addition, UCTC research appointments for graduate and undergraduate students are a form of education and training, and many students receive course credit for participation in UCTC-funded faculty projects.

## ***Graduate Programs***

Formal degree graduate programs or concentrations in transportation are offered on several campuses in the UC system, including Berkeley, Irvine, Los Angeles, Santa Barbara, and Riverside. The civil and environmental engineering departments at Berkeley and Irvine offer transportation engineering degrees. Programs in transportation planning and policy are offered at Berkeley, Irvine, and Los Angeles, and a concurrent degree program in transportation engineering and planning is also offered at Berkeley. At Irvine, the Department of Economics administers an interdisciplinary doctoral program in transportation science. The Berkeley transportation program has strong offerings in traffic operations, logistics, systems analysis, and transportation science; Berkeley also has extensive offerings in transportation, land use, and urban design. UCLA is developing a specialty in equity and the transportation needs of low-income communities. Santa Barbara works on GIS applications and advanced modeling, and Riverside focuses on transportation and air pollution.

Each of the campuses continues to maintain and improve their transportation programs, and to update courses and add new course offerings and programmatic specialties as opportunities arise.

## ***Undergraduate Programs***

UCTC funding for undergraduate education at the various campuses has continued to be focused on the development of new transportation courses, consistent with the objectives set in UCTC's latest Strategic Plan. UCTC will fund a new course for up to three years after which it should be approved and funded as part of the regular curriculum. Overall, undergraduate transportation courses offered with UCTC sponsorship have been well subscribed and well received, and have helped to spark interest in careers in transportation. A number of the undergraduates from these courses enroll in graduate transportation programs at UC or other top transportation programs.

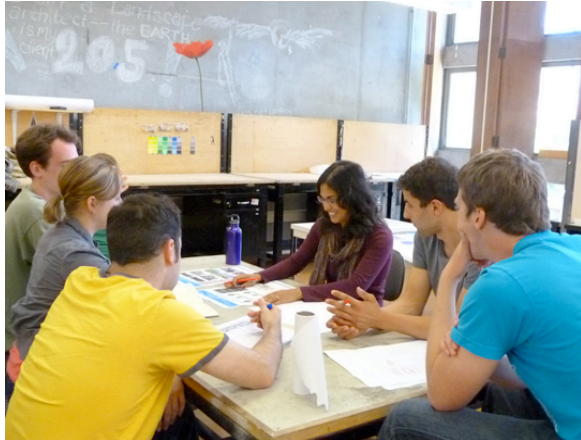


***An [IN]CITY student at a graphics station.***

Of note in Year 23, UCTC offered several educational opportunities for undergraduates and young professionals interested in the field. In Spring 2011, working with the UC Berkeley Department of City and Regional Planning (DCRP), UCTC Assistant Director Karen Frick hosted an undergraduate transportation week that included site visits, meetings with professionals and lectures/discussions to provide context. Approximately 20 students from a diverse range of fields, including engineering, planning, and social sciences participated. The week's topics included transit service planning, transit-oriented development (TOD), overviews of state and regional planning and engineering efforts, such as traffic operations systems, traveler information systems (511.org) as

well as pedestrian and bicycle planning. One telling comment from a participant: "Thanks so much for the week! I really can't stop talking about it (to the point that my friends and family are starting to get a bit aggravated). Between CP114 and the field trips I couldn't be more enthusiastic about transportation planning and policy. I am so excited to pursue transportation (and hopefully something parking-related) as a passion and career, and I have UCTC and DCRP to thank."





***[IN]CITY students working with an instructor (above); and jurors asking questions at the studio presentation.***



In Summer 2011, UCTC co-sponsored [IN]CITY, Introduction to Sustainable Cities, which is a unique six-week intensive summer program to expose approximately 70 students to sustainability and city planning issues, including transportation, land use, climate change, and related fields. It is designed especially for recent graduates holding bachelor's degrees and senior undergraduates.

The program is offered through the Department of City and Regional Planning (DCRP) and the College of Environmental Design at UC Berkeley, with UCTC Assistant Director Karen Frick as program director and lead instructor with special lectures by DCRP faculty, including UCTC faculty affiliate Professor Paul Waddell and UCTC Director Robert Cervero. In addition to lectures, there was a daily sustainability studio engaging students in an exploration of how cities can be planned in order to achieve critical sustainability goals, such as urban greening, reducing automobile dependence and increasing bicycling, transit and walking, transit-oriented development (TOD), and the reduction of greenhouse gas emissions.

The clients for this year's studio were the City of Berkeley and the Metropolitan Transportation Commission. The focus of their work was developing recommendations to implement the city's climate action plan and consider the context

of state and regional efforts through California State Bill 375.

Students conducted intensive fieldwork and developed key analysis and graphics skills that were used to develop and present their recommendations. Several studio final projects for the clients focused on transportation-related recommendations related to street and TOD improvements, streetscapes, pedestrian/bicycle safety and access, and bicycle sharing. Several city staff, including representatives of the Mayor's office and MTC, attended studio presentations and participated as studio jurors.

Also, as discussed below, we made a special effort to attract undergraduates to the annual UCTC student conference held this year at UC Berkeley. The undergraduates were paired with graduate students with similar interests to participate in poster presentations and to serve as mentors during the conference. They also submitted short papers about their experience and what they learned at the conclusion of the conference.

Finally, UCTC continued its "post-undergraduate intern" program for recently matriculated undergraduates to work with us on tech transfer and other projects.

## ***Continuing Education***

UCTC-sponsored conferences, symposia, and lecture series offer opportunities for both academics, practitioners, and elected and appointed officials to learn about, discuss, and debate new ideas in transportation. Each year UCTC supports such events and also provides funding so that UCTC faculty and students can attend other conferences to present their work.

In addition, transportation courses and other education and training opportunities are offered through the ITS Extension (which operates statewide) and the Extension programs of the various campuses. These courses reach transportation professionals and others who need a better understanding of transportation to effectively carry out their work in fields such as air quality planning and land use planning. UCTC research is frequently included in short courses offered by the University Extension. UCTC actively encourages researchers to participate in these activities and provides support for them to do so, to the extent that resources permit.

## ***Student Support***

UCTC provides student support in the form of fellowships, graduate student researcher appointments, doctoral dissertation grants, and an annual student of the year award.

## ***Fellowships***

US graduate students or permanent residents enrolled in any of UC's formal transportation programs (except Davis, which funds its programs through its own UTC) are eligible for UCTC fellowships. UCTC fellowships provide support for university fees and living expenses and may be combined with part-time research appointments not to exceed ten hours a week. Academic departments nominate the students on the basis of grades, test scores, letters of recommendation, record of accomplishments, and commitment to a career in surface transportation. Student must have an exceptional record and outstanding potential for a career in surface transportation to receive a UCTC fellowship. Overall fellowship funding is coordinated through the departments in accordance with University and departmental rules to assure an equitable distribution of financial support for top students. A student who is offered a fellowship from another program (e.g., an Eisenhower Fellowship or a UC Chancellor's Fellowship) is generally not awarded full UCTC funding.

## ***Graduate Student Researcher (GSR) Appointments***

Every faculty research project must include support for at least one graduate student, domestic or international, at 49% (or 2 GSRs at 25%) during the academic year, with full-time summer salary if funds allow. Currently faculty members are limited to one GSR due to past RABA reductions from authorized funding levels and uncertainty of funding futures. The Executive Committee has concluded that this limitation will continue to be imposed unless actual funding allows a higher level of expenditure. Many faculty members would prefer to support more than one student and UCTC campuses have the students to fill the slots, so we hope that funds will eventually permit fuller funding.

GSRs are considered to be junior colleagues of the principal investigator and other faculty participants and often play a major role in the actual conduct of the research. Graduate student contributions to research projects are acknowledged in any publication resulting from research funded in whole or in part by the Center. The acknowledgment can range from a footnote recognizing the student's participation and assistance to full co-authorship of reports and articles, depending upon the nature and extent of student contributions.

## ***Doctoral Dissertation Grants***

Each year, UCTC offers doctoral dissertation grants. Students from any of the UC campuses except Davis may apply for a dissertation grant, which is treated as a project if the student is a non-US citizen.

This year, 13 dissertation grants were awarded: (1) Modeling, estimation and control of large-scale transportation networks at the age of ubiquitous sensing, Sebastien Blandin, Doctoral Candidate, UC Berkeley, Advisor: Alexandre Bayen; (2) Behavioral change and life course turning points in activity processes, Pamela Dalal, Doctoral Candidate, UC Santa Barbara, Advisor: Konstadinos Goulias; (3) A Support System for Estimation and Monitoring of Real-Time On-Road Emissions, Hang Liu, Doctoral Candidate, UC Irvine, Advisor: Stephen Ritchie; (4) System-Level Optimization of Maintenance and Replacement Decisions for Heterogeneous Road Networks, Aditya Medury, Doctoral Candidate, UC Berkeley, Advisor: Samer M. Madanat; (5) Perceived and Actual Bicycling Safety as Related to Roadway Users' Knowledge, Attitudes, and Behavior, Rebecca Lauren Sanders, Doctoral Candidate, UC Berkeley, Advisor: Elizabeth Deakin; (6) The Rising Car Culture in China: Is sustainable urban development possible? How Planning Organizations Conceive of and Manage Rapid Motorization in China, Alainna Thomas, Doctoral Candidate, UC Berkeley, Advisor: Elizabeth Deakin; (7) A Structural Equations Approach to Time Use and Destination Choice Using a GPS Based Activity Diary Data Collection, Kathleen Deutsch, Doctoral Candidate, Department of Geography, UC Santa Barbara, Advisor: Konstadinos Goulias; (8) Gender Differences in Non-Work Travel Behavior: Interaction between Land Use and Sociodemographic Characteristics, Hsin-Ping Hsu, Doctoral Candidate, Department of Planning, Policy and Design and Economics, UC Irvine, Advisor: Marlon Boarnet; (9) An Activity-based assessment of bounds of alternative fuel vehicles and infrastructure, Jee Eun (Jamie) Kang, Doctoral Candidate, Department of Civil and Environmental Engineering, UC Irvine, Advisor: Will W. Recker; (10) Pavement Resurfacing Policy for Multi-criteria Minimization of Life-cycle Cost and Greenhouse Gas Emissions, Jeffrey Lidicker, Doctoral Candidate, Department of Civil and Environmental Engineering, UC Berkeley, Advisors: Samer Madanat and Arpad Horvath; (11) Access and Outcomes: Transportation, the Urban Environment, and Subjective Well-Being, Eric A. Morris, Doctoral Candidate, Department of Urban Planning, UC Los Angeles, Advisor: Brian Taylor; (12) Understanding the links between Regulatory Costs, Aspirations, Social Status, and (Un)sustainable Travel Behaviors, Manish Shirgaokar, Doctoral Candidate, Department of City and Regional Planning, UC Berkeley, Advisor: Elizabeth Deakin; (13) Increasing the Capacity of an Isolated Signalized Intersection, Yiguang Xuan, Doctoral Candidate, Department of Civil and Environmental Engineering, UC Berkeley, Advisor: Carlos Daganzo.

Applications for the grants are due in April for funding the next fall, and November for funding in the winter/spring term. The RFP for dissertation grants is maintained on the UCTC Web site, and notices of impending due dates are sent to faculty associates for distribution. Applicants must be students at the University of California and must be carrying out dissertation research on transportation topics consonant with UCTC's theme of systems analysis and policy. The applicant must have advanced to candidacy for the PhD degree prior to the application deadline and must submit a brief synopsis of the dissertation proposal for review, along with a curriculum vita, graduate school transcripts, and a letter of nomination from the student's principal academic advisor. The pool of applications is reviewed by a committee of faculty and/or recent PhD graduates from several UC campuses, appointed by the UCTC Director. Every effort is made to strike a disciplinary balance of reviewers that span both technical and policy arenas. Grants are awarded on the basis of reviewers' assessments of the originality and significance of the research topic, the applicant's overall record of academic and professional accomplishment, and the relevance of the research topic to current issues

in transportation policy. The dissertation grant abstracts are listed on our Web site along with faculty research projects. Completed dissertations are published on the Web site as well.



***Eric Gonzales, winner of the 2010-2011 UCTC Student of the Year Award.***

Research Board (TRB) in Washington, DC, each January. The award acknowledges superior academic performance, commitment to transportation research and/or practice, and prospects for contributing to the transportation profession in the future. This year's award was given to Eric Gonzales, a PhD student in Civil and Environmental Engineering at UC Berkeley.

Each year UCTC Executive Committee members choose a Student of the Year, who is awarded \$1,000 plus costs to attend the award ceremony held during the annual meeting of the Transportation

Gonzales was also given the Gordon Newell Award for Excellence in Transportation Science from the UC Berkeley transportation faculty. Assistant Professor Joan Walker presented the award for the first time since 2006 and only the fifth time since the award was established in 2001. Gonzales earned the award for his contribution to the development of a class in public transit, as well as teaching excellence. He has written his dissertation on how to determine the most efficient and cost effective way to allocate space for various types of transport in cities.



***Eric Gonzales receiving the Gordon Newell Award from Barbara Newell.***

## **2.3 Technology Transfer**

UCTC's technology transfer efforts aim to translate research results in an accessible format and in ways that reach the broader practitioner community and general public. We view technology transfer as including: publications, both on the web and in hard copy; conferences and symposia; policy advising and public service; and outreach efforts to business and community groups and the general public. Continuing education, discussed earlier, is also a tech transfer activity. Our ultimate objectives are to increase public understanding of transportation problems and opportunities for improvement, and to help transportation professionals to address transportation problems using the latest research findings and innovations.

These activities are discussed in more detail below.

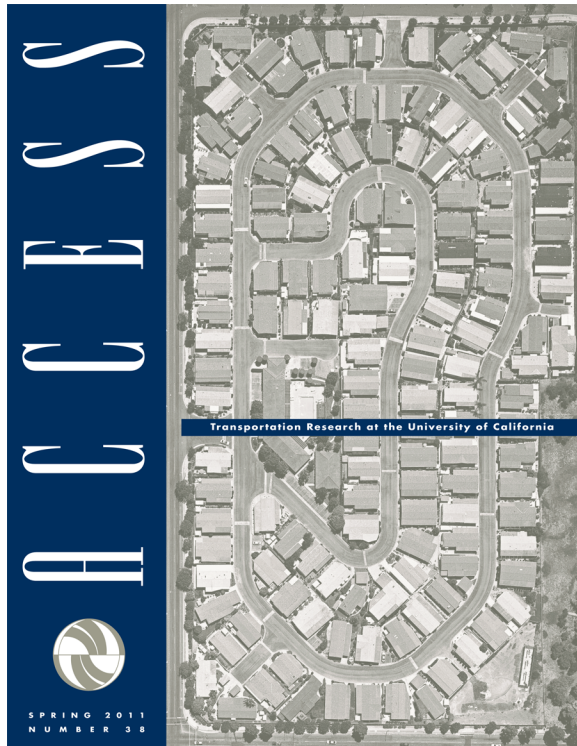
## ***Publications***

UCTC considers publications to be a vital way to communicate our research findings. Each project funded by UCTC ordinarily produces several papers and reports, which we make available in hard copy form and disseminate as PDFs on the UCTC Web site.

The results of UCTC faculty research and dissertations are posted on the Web site as PDFs. To date, there are 962 UCTC research papers (up to and including FR 2011-28). Research areas include transportation and land use, transit-oriented development, transportation finance and pricing, energy and fuel consumption, travel behavior, parking policies, public transit, pedestrian and bicycle planning, urban design, and traffic operations.



In 2010-2011, UCTC issued seven Policy Briefs on: bicycle-oriented design, visual ethnography of transit, emissions modeling, transit operations and transit policy, electric vehicles, and freight. Policy Briefs are printed and mailed to targeted recipients; they are also posted on UCTC's website at <http://www.uctc.net/research/briefs.shtml>. There are now a total of 11 Policy Briefs.



UCTC also publishes ACCESS Magazine. ACCESS summarizes UCTC-sponsored work as well as other relevant work at the University of California in a style of writing aimed at a general audience. Printed copies of ACCESS are distributed free to 13,781 hard copy subscribers. This year, we discontinued mailing ACCESS overseas in order to reduce expenses and expanded our email list. More than 2,800 people receive the email notification. Because of a change in server software, we have data for only the latest issue, ACCESS 38. There were more than 1,500 page views of ACCESS number 38 articles in html, which was the third time that ACCESS was made available in this format. The current issue and back issues can be found by visiting <http://www.uctc.net/access/access.shtml>.

### ***Conferences and Symposia***

UCTC grant recipients are expected to participate in conferences, public lectures and seminars to communicate their research findings to both academics and practitioners. UCTC also helps faculty members to organize special research conferences and events as opportunities arise, when funds are available.

Of note, UCTC supports the annual Lake Arrowhead Conference on Transportation, Land Use and the Environment, designed to bring together over 100 researchers, practitioners, and elected officials to discuss and debate important policy issues. This year's conference title was "Infrastructure Investment for Sustainable Growth." UCTC-affiliated presenters were co-organizers Brian Taylor and Allison Yoh of UCLA, Marlon Boarnet of UC Irvine, Martin Wachs, professor emeritus of UCLA and Berkeley, and Samer Madanat of UC Berkeley. Speakers included Susan J. Binder, Cambridge Systematics; formerly of the U.S. Senate Committee on Environment and Public Works Rod Diridon, California High Speed Rail Authority; S. David Freeman, former president of the Los Angeles Harbor Commission; Heather Fargo, California Strategic Growth Council; JayEtta Hecker, Bipartisan Policy Center; formerly of the Government Accountability Office (GAO); Hasan Ikhrata, Southern California Association of Governments; Randall Lewis, Lewis Operating Corporation; the Honorable Alan Lowenthal, California State Senate; Maria Mehranian, Cordoba Corporation; Pam O'Connor, Los Angeles Metro Board of Directors; Leslie Rogers, Federal Transit Administration; Carol Whiteside, California Strategies, LLC; and Denny Zane, Move LA, former mayor of Santa Monica.

UCTC also supports the annual UCTC Student Conference, designed to give graduate students the experience of organizing a conference, presenting their work, and discussing the work of their peers. This year the conference was held at UC Berkeley with approximately 200 students in attendance,



including 16 undergraduates who were paired with graduate students as mentors during the conference and to participate in poster presentations. There were approximately 100 student and faculty presentations in lectern or poster format. The keynote presentation was made by Jose Gomez-Ibanez, the Derek C. Bok Professor of Urban Planning and Public Policy at Harvard University's Graduate School of Design and the John F. Kennedy School of Government, who delivered the 2011 Melvin Webber Lecture, honoring UCTC's first director. Additionally, the conference hosted a panel, "Parking: Innovative Practice and Policy," which brought together leaders from the private, public, and academic fields to discuss what cars do the 95 percent of the time that they are not being driven, featuring Tod Dykstra of Streetline, UCLA professor Donald Shoup, and Jay Primus of the San Francisco Municipal Transportation Authority; moderated by Susan Shaheen of UC Berkeley.

### ***Additional highlights from FY2010-2011:***

- The 5th Annual Martin Wachs Lecture was given in Berkeley by Genevieve Giuliano, who spoke on "What's Wrong with U.S. Public Transit Policy?"
- World Symposium on Transport and Land Use Research, July 28-30, 2011 Whistler, British Columbia, Canada. Inaugural conference, co-sponsored by UCTC, Center for Transport Studies at the University of Minnesota, Georgia Transportation Institute, UC Davis Sustainable Transportation Center, the University of Connecticut Center for Transportation and Livable Systems and the University of Vermont Transportation Research Center. Featuring Ed Glaeser (Fred and Eleanor Glimp Professor of Economics, Department of Economics, Harvard University), Robert Cervero (Professor of City & Regional Planning, Director, UCTC), and David Banister (Professor of Transport Studies, Oxford University).
- Publishing launch at 2011 Annual Meeting of the Transportation Research Board for *Auto Motives: Understanding Car Use Behaviours*, edited by Karen Lucas, Evelyn Blumenberg, and Rachel Weinberger, based on previously funded UCTC-funded research.
- UCTC partnered with Caltrans and other California University Transportation Centers (UC Davis, USC, San Jose State (Mineta Transportation Institute), the Leonard Center for California State Universities, METRANS Transportation Center--University of Southern California and California State University Long Beach) on a series of webinars aimed at practitioners that focused on research funded by the California UTCs. Topics were: "Efficient Management of Road Construction & Operations," METRANS and UCTC; "Encouraging Sustainable Behavior," UC Davis and UCTC; "Considerations in Transportation," METRANS and UCTC; "Rethinking Infrastructure," UCTC, UC Davis and METRANS; "Topics in Travel Behavior," Mineta and UC Davis; "Lessons from Abroad," Mineta, UC Davis, and METRANS.
- UCLA Institute of Transportation Studies faculty member Donald Shoup and Lewis Center Associate Director Allison Yoh testified before a California Senate Committee on Transportation and Housing hearing on reducing congestion and greenhouse gas emissions through parking policy.
- UCLA Institute of Transportation Studies researchers were invited to provide a monthly speaker series for Los Angeles Metro's executive staff. Topics included equity issues and the politics of congestion pricing, immigrants' use of public transit, the effects of wait time on transit users' perceptions, and the transit dimensions of local climate planning. Presenters

included Evelyn Blumenberg, J.R. DeShazo, Michael Manville, Brian D. Taylor, and Allison Yoh.

- The Lewis Center and the UCLA Institute of Transportation Studies co-sponsored a transportation lecture series featuring researchers, practitioners, transportation consultants, and elected officials from across the U.S. The following presentations took place: “Transportation Issues in and Lessons from the Developing World,” by Rui Wang, UCLA Department of Urban Planning; “Transportation Policy, Poverty, and Sustainability: History and Future,” by Martin Wachs, RAND Corporation; “Plans for Managing Goods Movement in Southern California,” by Hasan Ikhrata, Southern California Association of Governments; “High-Speed Rail Planning in Metropolitan LA: an Update,” by Paul Taylor, Los Angeles County Metropolitan Transportation Authority; “Evaluating the Costs and Benefits of Rail Transit in Honolulu,” by Panos Prevedouros, University of Hawaii; “What Can/Are Local Governments Doing to Better Manage Parking?” by Donald Shoup, UCLA; “Current Issues in Transportation in NYC: Three New York City Transportation Mega Projects that Affect National Transportation Policy,” by Robert Paaswell, City College of New York, and the University Transportation Research Center; and “Bicycle and Pedestrian Planning Go Mainstream,” by Ryan Snyder, Ryan Snyder Associates, LLC.
- Lewis Center postdoctoral scholar Michael Manville taught a new graduate level course analyzing the political problem of traffic congestion in the Luskin School of Public Affairs.
- UC Irvine’s Institute of Transportation Studies held several seminars that included a range of topics and speakers from UC and other campuses, including Linda Fernandez of UC Riverside, and Masanobu Shinozuka of UC Irvine. Topics included: Optimal Mainstream Traffic Flow Control of Large Scale Motorway Network, Trade Transport and Environment Linkages at the U.S. Mexico Border Socio-Economic Effect Of Seismic Retrofit Of Bridges For Highway Transportation Networks: A Pilot Study, and Zoning Paratransit System with Transfers.
- “Green driving strategies based on inter-vehicle communications,” UCTC-sponsored research by Dr. Wenlong Jin’s group at UC Irvine, was featured at the Eco-Driving Workshop, held at UC Berkeley. UC Riverside Professor Matt Barth also presented his research.
- UC Irvine graduate student Jamie Kang received the Graduate Student Community Award given by the UC Irvine Association of Graduate Students for her founding of ITS Irvine’s Women’s Group.
- UC Irvine’s Pierre Auza was awarded the Railway Club of Southern California 2011 Scholarship. The RCSC has been dedicated to promoting the diverse professions within the railroad industry and sponsoring fellowship among railroad professionals in the Southern California area.
- UC Irvine Professor Stephen Ritchie was awarded the 2010 ASCE Orange County “Distinguished Engineering Educator of the Year.” This is the second time he received this award.
- UCTC jointly sponsored research seminars with other UC Berkeley research centers. The seminars included the following topics: "Analyzing Travel Behavior Using the National

Household Travel Survey" by Swati Pande, UC Berkeley; "Centrality Characteristics of Traffic Analysis Zone Road Network Patterns" by Yuanyuan Zhang, Visiting Scholar, at UC Berkeley, "We All Want the Same Thing: Results from a Roadway Design Survey of Pedestrians, Drivers, Bicyclists, and Transit Users in the Bay Area" by Rebecca Sanders Carlton, UC Berkeley; "Applying Safety in Numbers: What it means for public health," by Peter Jacobsen, an independent researcher; "Design of Mobile and Web Applications for Tracking and Supporting Sustainable Transportation Behavior," by Jerry Jariyasunant, UC Berkeley; "Measuring Individuals' Travel Patterns and Spatial Knowledge Using Smart-Phones," by Drew Dara-Abrams, UC Santa Barbara; "How Do People Choose a Travel Mode? Factors Associated with Routine Walking & Bicycling," by Robert Schneider, UC Berkeley; "Analysis of Accident Data using Time Series Models," by Oh Hoon Kwon, Visiting Scholar, UC Berkeley; "Chicago and Its Skyway: the Cintra-Macquarie Lease in Historical Perspective," by Louise Nelson Dyble, Assistant Professor of History at Michigan Technological University (Co-sponsored by UCTC and the Institute of Urban and Regional Development); "Carbonless footprints: Promoting health and climate stabilization through active transportation," by Lawrence D. Frank, University of British Columbia, sponsored by: School of Public Health; College of Environmental Design; Institute of Urban and Regional Development; UCTC; and the Safe Transportation Research and Education Center; "How Will Obama's 'Livability' Policies Transform American Cities?" by Randal O'Toole, Cato Institute, presented at UC Berkeley, sponsored by UCTC.

In addition, travel to conferences is supported as part of research grants, and each campus is provided a travel fund so that faculty and students can participate in the Transportation Research Board Annual Meeting. As funds allow and on a case by case basis, UCTC will also fund travel to meetings of other learned societies and professional organizations such as the Institute of Transportation Engineers, the American Society of Civil Engineers, the American Planning Association, the Association of Academic Schools of Planning, the American Association of Geographers, the American Political Science Association, and the American Economic Association. In addition, faculty members are provided travel support when they serve on committees for federal, state, and local agencies as well as independent organizations such as the National Academy of Sciences.

UCTC faculty and students participated in numerous presentations and panels at the 2011 Annual Meeting of the Transportation Research Board and had more than 60 papers accepted for poster sessions or presentations.

### ***Policy Advising, Tech Transfer and Outreach***

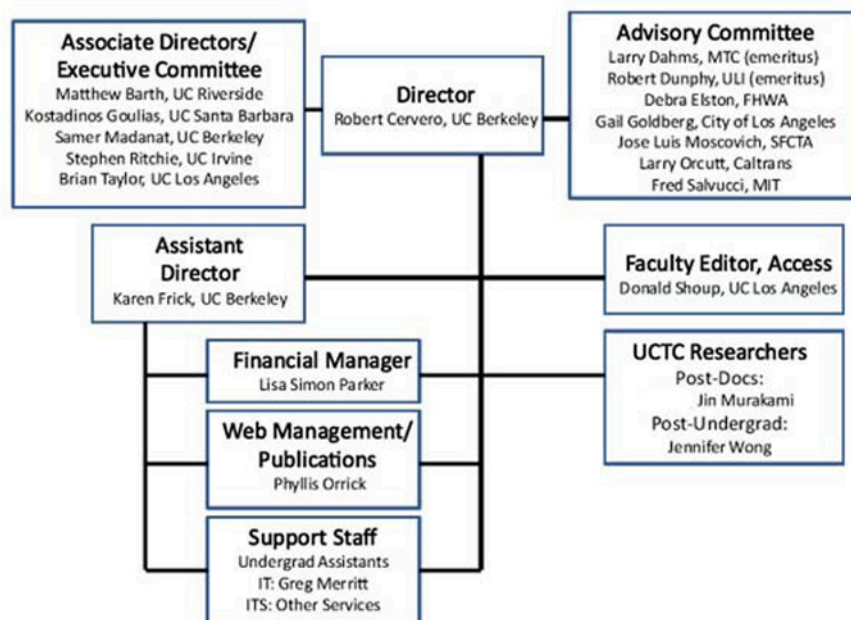
UCTC encourages its researchers to engage in a variety of public service and professional activities, through which they communicate UCTC-funded research findings to a broad audience. These activities include appointments to committees and boards of federal, state, regional, and local transportation agencies; provision of expert testimony and advice to the Congress, State Legislatures, and regional and local bodies; technical assistance to public and private transportation organizations; and public service on transportation and related matters. When needed and as funds allow, UCTC provides travel expenses, meeting expenses, or other support, including research support, to enable faculty to provide these public services. Upon request, UCTC faculty members also work with the news media to provide research findings, data, and expert opinions for articles and reports on current transportation issues. In addition, UCTC sets aside funds to respond to requests of policy officials at all levels of government to address contemporary issues in the transportation field.

Several researchers at UCTC also conducted an independent evaluation of congestion pricing on the San Francisco-Oakland Bay Bridge at the request of the region's Bay Area Toll Authority. Results from the research were presented to the board and the report is available on the UCTC web site.

### 3. MANAGEMENT STRUCTURE & CENTER STAFF

The University of California Transportation Center is a multi-campus center currently headquartered on the Berkeley campus of the UC system. Center personnel include a half-time director who also is a faculty member, plus a small administrative and editorial staff. Direction for the UCTC comes from a faculty Executive Committee constituted by faculty members from each of the five main UC campuses, also serving in the role as Associate Directors.

Coordination with other California Transportation Centers and with our Caltrans sponsor takes place through meetings with center directors and Caltrans staff. UCTC also draws upon a variety of institutional resources at participating campuses, including the administrative services of researchers' academic departments and research institutes, whose support is donated. See Exhibit 1 for an organizational chart of UCTC for Year 23.



**Exhibit 1. UCTC's Organizational Structure**

#### *Center Director*

Professor Robert Cervero of the Department of City and Regional Planning (DCRP) at UC Berkeley is the current UCTC Director. Professor Cervero has been a faculty member since 1980 and

maintains affiliations with a number of other research units on the UC Berkeley campus, including the Energy Resource Group and the Berkeley Volvo Center of Excellence on Future Urban Transport. His interests span the areas of sustainable transportation systems, transportation and land use interactions, and comparative international analyses of infrastructure investments. This year, Professor Cervero was named Director of the Institute of Urban and Regional Development (IURD), after serving as interim Director since 2009. This year he was also appointed the inaugural Carmel P. Friesen Chair in Urban Studies.

This chair was endowed by a \$1 million gift from Carmel P. and Howard R. Friesen, matched by the William and Flora Hewlett Foundation.

### ***Executive Committee***

The UCTC Executive Committee is a faculty committee that sets the overall policy direction for the Center and assures coordination with the major transportation research and education groups on the various campuses. The Executive Committee consists of the UCTC Director plus faculty representatives of the five UC campuses, spanning the directorships of the various campuses' Institutes of Transportation Studies or their representatives as well as other transportation-related institutes. This representative membership facilitates information exchange about education programs, recruiting, and other academic matters and aids in the coordination of research among the campuses and research units. Members of the Executive Committee for 2010-2011 were:

- Robert Cervero, Professor of City & Regional Planning, UCTC Director, UC Berkeley
- Samer Madanat, Director, Institute of Transportation Studies, Professor of Civil and Environmental Engineering, Berkeley
- Steve Ritchie, Director, Institute of Transportation Studies, Professor of Civil and Environmental Engineering, UC Irvine
- Brian Taylor, Professor of Urban Planning and Director of Institute of Transportation Studies, UCLA
- Kostas Goulias, Professor of Geography, UC Santa Barbara
- Matthew Barth, Professor of Electrical Engineering, UC Riverside

The Executive Committee is responsible for 1) establishing the theme for the Center as set forth in the UCTC strategic plan, 2) advising and assisting the director in the development of the strategic plan, which establishes the allocation of funds among research, education, and technology transfer programs, 3) working with the Director in consultation with USDOT, Caltrans, and transportation advisors to identify and designate specific subject matter priorities for research funding in a particular year, 4) setting rules for allowable expenditures on research projects, consistent with USDOT and Caltrans requirements, 5) conducting an annual review of the Center's overall performance and resources, and redirecting funds and activities as necessary, and 6) when the Directorship of the UCTC becomes vacant, selecting a new director for UCTC.

Members of the UCTC Executive Committee meet in person at least once a year and transact business in the interim through telephone conference calls and e-mail. The Executive Committee's time is donated.

### ***Center Faculty***

Faculty affiliates of the UCTC are individuals throughout the UC system who participate in the research, teaching, and continuing education programs funded by the UCTC. We maintain contact with our faculty affiliates by inviting them to participate in our research, education, and technology



transfer programs, by coordinating UCTC research with other research activities these faculty members are conducting, and by providing them with publications and other information services. Exhibit 2 lists current faculty affiliates. The list is updated annually and is posted on the UCTC Web site, [www.uctc.net](http://www.uctc.net) with email addresses.

### ***Staff***

UCTC maintains a small staff, located at the UCTC headquarters office at 2614 Dwight Way, 2nd Floor, Berkeley, CA 94720-1782. (See: <http://www.uctc.net/contact.shtml>). The staff members in Fiscal Year 2010-2011 were:

- Robert Cervero: Professor of City and Regional Planning, Director (half time, plus partial summer salary)
- Karen Frick, Assistant Director (50% time). Dr. Frick has been in charge of tech transfer and education activities since joining the UCTC staff while also assisting the Director on special projects.
- Lisa Simon-Parker (September 2010-present) who assists with financial management.
- Donald Shoup: Professor of Urban Planning, University of California Los Angeles and Editor of Access Magazine.
- Jin Murakami (August 2010-present): UCTC post-doc, responsible for assistance with tech-transfer and tech-assistant projects.
- Phyllis Orrick: Web management, publications management, and editorial assistance.
- Gregory Merritt: Information-technology services.

**Student Assistants:** Undergraduate students are hired to provide clerical support, reporting to the Assistant Director. UCTC also has created a “post-undergraduate” intern position for newly graduated students to work on tech transfer and other projects.

**Accounting and Personnel Staff:** UCTC Headquarters accounting and personnel support is provided by the business-service staff of the Institute of Transportation Studies, UC Berkeley. All other campus-based research, education, fellowship and tech transfer accounting and personnel services are provided by participating research units and departments.

## **Exhibit 2. UCTC Faculty Affiliates**

### **UC Berkeley**

Alexandre Bayen  
Peter C. Bosselman  
Michael J. Cassidy  
Robert Cervero (UCTC Director)  
Karen Chapple  
Daniel Chatman  
Jason Corburn  
Carlos Daganzo  
Elizabeth A. Deakin  
Karen Trapenberg Frick  
Mark Hansen  
Robert Harley  
J. Karl Hedrick  
Arpad Horvath  
Adib Kanafani  
Elizabeth Macdonald  
Samer Madanat (UCTC Associate Director)  
John M. Quigley  
David R. Ragland  
Alexander Skabardonis  
Michael Southworth  
Paul Waddell  
Joan Walker

### **UC Irvine**

Marlon G. Boarnet  
David Brownstone  
Jan Brueckner  
Linda Cohen  
Kristen Day  
Joseph DiMento  
Amihai Glazer  
Thomas Golob  
John D. (Doug) Houston  
R. Jayakrishnan  
Wenlong Jin  
Michael G. McNally  
Raymond W. Novaco  
Will Recker  
Amelia Regan  
Stephen G. Ritchie (UCTC Associate Director)  
Jean Daniel Saphores  
Kenneth A. Small

**UCLA**

Evelyn Blumenberg  
William A.V. Clark  
Randall D. Crane  
Anastasia Loukaitou-Sideris  
Paul Ong  
Allen J. Scott  
Donald C. Shoup  
Brian D. Taylor (UCTC Associate Director)  
Rui Wang  
Arthur Winer  
Allison Yoh

**UC Riverside**

Richard Arnott  
Matthew J. Barth (UCTC Associate Director)  
Kanok Boriboonsomsin

**UC Santa Barbara**

Antonio M. Bento  
Richard Church  
Konstadinos Goulas (UCTC Associate Director)

**UC Santa Cruz**

Richard Gil  
Justin Marion

**UC San Diego**

Mohan Trivedi

## 4. INSTITUTIONAL SUPPORT

UCTC's success depends on our strong working partnership with the California Department of Transportation (Caltrans), as well as on the broad support we receive from the University of California. The UC Office of the President, the administrations of the various campuses, the research institutes and departments of those campuses that offer transportation degrees, and the faculty who participate in UCTC activities all contribute to UCTC's activities. Because UCTC can rely on this substantial institutional support, we are able to devote most of our funding to the direct costs of research, education, and technology transfer.

### *Caltrans Support of UCTC*

As it has done since the UCTC's inauguration, Caltrans matched US Department of Transportation (US DOT) funds dollar-for-dollar. The latest agreement, signed in April 2007, provided matching funds through the end of the fiscal year of this Annual Report (FY 2009-2010). The Caltrans contract was amended to include Fiscal Year 2010-2011.

### *UC Support*

Since the creation of the Center, the University of California has waived overhead on the matching funds from Caltrans, recognizing the vital educational objectives of the UCTC program and noting that Caltrans funds UCTC's administration and participates in shaping, but does not control, the research agenda. The University again has waived overhead on Caltrans matching funds for the new grant signed earlier this year. In addition, the University provides administrative services, but does not charge overhead on the portion of USDOT funds used for fellowships.

The University has made an even larger commitment to transportation research and education programs through its permanent financial support for faculty positions in transportation. The US DOT now requires a \$400,000 commitment in regularly budgeted institutional funds for a university to be eligible for Center designation; salaries and benefits for the full-time faculty members who conduct transportation research at Berkeley alone greatly exceed that amount.

UCTC depends upon the support of several academic departments and research institutes for most of its day-to-day operations. The departments and research institutes manage education grants, fellowship funds and research grants, and contribute the office and laboratory space, instructional facilities, computational equipment, accounting services and other administrative support needed to carry out these programs and activities. Most of this support is provided without charge. The Institutes of Transportation Studies at Berkeley and Irvine, the Lewis Center / ITS at UCLA, the Institute of Urban and Regional Development at Berkeley, the Department of Geography at UC Santa Barbara, and the UC Riverside CE Center for Environmental Research and Technology (CE-CERT) provide research administration and support for UCTC grants.

UCTC faculty and students also benefit from their access to University computer, data, and library resources. The University is a federal data repository and has developed extensive capabilities to support the efficient retrieval and analysis of information from a variety of sources. A US Census Center at UC Berkeley makes this important data source far more accessible. Our computer facilities include advanced software for modeling, analysis, and data display. A major resource is the University of California library system. We are especially proud of the Harmer E. Davis Library of

the Institute of Transportation Studies at Berkeley, which houses one of the largest collections of transportation materials in the world and provides a wide range of support services to UCTC faculty and student researchers on all campuses.

Finally, faculty members' time commitments are a substantial source of support for UCTC. Faculty members typically hold nine-month (academic year) appointments that are fully funded by the University. They are expected to spend a substantial portion of this University time on research. Consequently, UCTC faculty grant recipients typically devote a third or more of their time during the academic year to their research projects. UCTC itself funds only a portion of their summer salaries. The UC-funded time on research multiplies UCTC's salary support for research by a factor of three or four. Participation in the governance of UCTC is a second way that faculty time is donated. Faculty members serve on the Executive Committee, on committees that review fellowship applications and dissertation grant proposals, and on ad hoc committees formed to develop conferences, workshops, and other outreach activities. All of this service is provided all free of charge to UCTC.

Likewise, students with fellowships from the University, from NSF, and from a variety of other sources often participate in UCTC projects without being directly paid with UCTC funds. Students, for instance, do most of the work organizing the annual UCTC Student Conference on a pro bono basis. UCTC funding for graduate students is often amplified by pairing UCTC support with other funding sources.

### ***Research Partnerships***

UCTC works closely with the following research centers to coordinate research. It is our intent to complement and sometimes to jointly fund research projects while avoiding duplication.

#### **PATH**

The California Center for Innovative Transportation (CCIT) merged with the California Partners for Advanced Transit and Highways (PATH) this year in an organization that will operate under the PATH name. The new center will retain the PATH acronym, which now stands for Partners for Advanced Transportation technology. PATH will remain a UC-wide program headquartered at UC Berkeley. It will have locations on campus, in downtown Berkeley, and at the Richmond Field Station.

#### **NEXTOR II**

The National Center of Excellence for Aviation Operations Research (NEXTOR) The aviation research consortium, NEXTOR, has recently been awarded a new seven-year contract that will provide up to \$60 million for aviation research. The program also has a new name: NEXTOR II. It is a consortium sponsored by the Federal Aviation Administration (FAA), consisting of UC Berkeley, the Massachusetts Institute of Technology, the University of Maryland at College Park and Virginia Polytechnic and State University. Research areas addressed by NEXTOR include advanced air traffic management systems, air traffic safety and security, and the performance and productivity of the nation's aviation system.

#### **PAVEMENT RESEARCH CENTER**

The Pavement Research Center (PRC) is an international authority on pavement structures, materials, and technologies. The PRC's core mission is to research questions for the California Department of Transportation pertaining to the design, construction, rehabilitation and maintenance of the state's 75,000-lane-kilometer network of roads. PRC has branches at both UC Berkeley and UC Davis.



## **SAFETREC**

The Safe Transportation Research and Education Center (SafeTREC ) is a joint venture of the Institute of Transportation Studies and the School of Public Health at UC Berkeley. Its goals are to reduce traffic fatalities and injuries through multi-disciplinary collaboration in education, research, and outreach, and to make traffic safety information widely available. The Center's fields of research include pedestrian safety, passenger safety, and safe mobility for older drivers, and cost-benefit analysis of traffic safety interventions.

## **VOLVO CENTER FOR FUTURE URBAN TRANSPORT**

The UC Berkeley Volvo for Future Urban Transport was established in 2004 with funding from the Volvo Research and Educational Foundations after a competition involving a large field of international candidates. The Center's mission is to study the mutual interdependence of urban transportation policy and technology and use the understanding of that concept to devise sustainable transportation strategies for the world's cities. Faculty and students from several engineering departments and from City and Regional Planning are the core researchers.

## **GLOBAL METROPOLITAN STUDIES**

Global Metropolitan Studies is a new initiative on the Berkeley campus involving 70 17 members from a dozen departments. The interdisciplinary center carries out research and outreach and supports teaching on urban and metropolitan problems and opportunities worldwide. Transportation is a significant subject of analysis for GMS and several projects are being provided support by UCTC in the form of office space. In turn, UCTC will publish the results of the work. Faculty members from other campuses participate in GMS activities including research projects and conferences.

## **SUSTAINABLE TRANSPORTATION RESEARCH CENTER**

The Sustainable Transportation Research Center is a transportation research initiative at Berkeley, jointly sponsored by ITS, UCTC, Global Metropolitan Studies, the UC Energy Institute, and the UC Berkeley Energy and Resources Group. The center's mission is to find effective responses to the energy and environmental challenges facing transportation systems worldwide while also assuring that they are equitable, economic, and a significant contributor to the quality of life for all.

## **OTHER PARTNERSHIPS**

UCTC benefits from additional partnerships with other UTCs located in California. Two other University Transportation Centers have successfully competed for UTC designation, the Mineta Institute at California State University, San Jose and METRANS - the Center for Metropolitan Transportation Studies at the University of Southern California in Los Angeles. In addition, Congress designated two additional new centers in California, at UC Davis (as noted earlier) and at Cal State San Bernardino (the Leonard Center). Caltrans has agreed to provide matching funds to all five centers. To coordinate our efforts, the Center Directors and key administrators meet together with Caltrans staff three times a year, with the meeting location rotating among campuses. UCTC invites both faculty and students from the other centers to participate in the annual student transportation conference that we sponsor, to join us at conferences and symposia, and to exchange research results.

UCTC also benefits from the advice and participation of transportation professionals drawn from a variety of public and private organizations. Over 200 individuals outside the UC system are on our

reviewer list and over one-quarter of them participated in reviews during the latest grant cycle. About half of the reviewers are from other universities; 20 percent are from federal, state and regional agencies, and thirty percent are from the private sector. In addition, UCTC has received funding from several private firms to help support conferences and workshops.

## 5. RESEARCH PROJECT STATUS

During the year, 30 research papers were completed as were seven Policy Briefs that were widely distributed to practitioners, as shown in Tables 1 and 2.

While UCTC projects are designed to be one year in duration, extensions may be granted for good cause. Most commonly, extensions are requested when funding reaches the UC campus considerably after the school term has already begun, making it difficult to arrange student appointments until the following term.

**Table 1: Research Papers 2010-2011**

1. Chapple, Karen, Jake Wegmann, Alison Nemirow and Colin Dentel-Post Yes in My Backyard: Mobilizing the Market for Secondary Units September 2011, UCTC-FR-2011-28
2. Ng, Chen Feng, and Kenneth A. Small Tradeoffs among Free-flow Speed, Capacity, Cost, and Environmental Footprint in Highway Design September 2011, UCTC-FR-2011-27
3. Shoup, Donald The Price of Parking on Great Streets September 2011, UCTC-FR-2011-26
4. Houston, Douglas, Paul Ong, Guillermo Jaimes and Arthur Winer Traffic exposure near the Los Angeles–Long Beach port complex: using GPS-enhanced tracking to assess the implications of unreported travel and locations September 2011, UCTC-FR-2011-25
5. Shoup, Donald The Politics and Economics of Parking on Campus September 2011, UCTC-FR-2011-24
6. Shoup, Donald Putting Cities Back on Their Feet September 2011, UCTC-FR-2011-23
7. Shoup, Donald Progress in immobility: How optimization of stationary traffic can improve traffic flow September 2011, UCTC-FR-2011-22
8. Shoup, Donald Yes, Parking Reform Is Possible: A progress report from the author of The High Cost of Free Parking September 2011, UCTC-FR-2011-21
9. DePalma, Elijah, and Richard Arnott Morning Commute in a Single-Entry Traffic Corridor with No Late Arrivals September 2011, UCTC-FR-2011-20
10. Arnott, Richard, Eren Inciz and John Rowse Downtown Parking and Traffic Congestion: A Diagrammatic Exposition September 2011, UCTC-FR-2011-19
11. Arnott, Richard, and John Rowse A Bathtub Model of Traffic Congestion September 2011, UCTC-FR-2011-18
12. Arnott, Richard, and John Rowse Curbside Parking Time Limits September 2011, UCTC-FR-2011-17
13. Arnott, Richard, and John Rowse First-Best Downtown Transportation Systems in the Medium Run September 2011, UCTC-FR-2011-16
14. Shah, Nilopa, and Jan K. Brueckner Price and Frequency Competition in Freight Transportation September 2011, UCTC-FR-2011-15
15. Jariyasunant, Jerald, Daniel B. Work, Branko Kerkez, Raja Sengupta, Steven Glaser and

Alexandre Bayen Mobile Transit Trip Planning with Real-Time Data September 2011, UCTC-FR-2011-14
16. Dalal, Pamela, Yali Chen, Srinath Ravulaparthi and Konstadinos G. Goulias Dynamic Opportunity-Based Multipurpose Accessibility Indicators in California September 2011, UCTC-FR-2011-13
17. Deutsch, Kathleen, and Konstadinos G. Goulias Understanding Places Using a Mixed Method Approach September 2011, UCTC-FR-2011-12
18. Deutsch, Kathleen, SeoYoun Yoon and Konstadinos G. Goulias Using Sense of Place to Model Behavioral Choices August 2011, UCTC-FR-2011-11
19. Jariyasunant, Jerald, Andre Carrel, Venkatesan Ekambaram, DJ Gaker, Thejovardhana Kote, Raja Sengupta and Joan L. Walker The Quantified Traveler: Using personal travel data to promote sustainable transport behavior August 2011, UCTC-FR-2011-10
20. Guerra, Erick, Robert Cervero and Daniel Tischler The Half-Mile Circle: Does It Best Represent Transit Station Catchments? August 2011, UCTC-FR-2011-09
21. Weir, Margaret, Jane Rongerude and Christopher K. Ansell Collaboration Is Not Enough: Virtuous Cycles of Reform in Transportation Policy May 2011, UCTC-FR-2011-08
22. Ravulaparthi, Srinath, and Konstadinos G. Goulias Forecasting with Dynamic Microsimulation: Design, Implementation, and Demonstration May 2011, UCTC-FR-2011-07
23. Cervero, Robert, Junhee Kang, and Kevin Shively From elevated freeways to surface boulevards: neighborhood and housing price impacts in San Francisco March 2011, UCTC-FR-2011-06
24. Mondschein, Andrew, Brian D. Taylor, and Stephen Brumbaugh Congestion and Accessibility: What's the Relationship? March 2011, UCTC-FR-2011-05
25. Fink, Camille N.Y., and Brian D. Taylor Zen in the Art of Travel Behavior: Using Visual Ethnography to Understand the Transit Experience March 2011, UCTC-FR-2011-04 See also the Web site: <a href="http://www.its.ucla.edu/uclatransitphotos/Related">http://www.its.ucla.edu/uclatransitphotos/Related</a> policy brief: PB-2011-06: Zen in the Art of Travel Behavior: Riders Use Their Cameras to Talk about Their Transit Experience
26. Orrick, Phyllis, Karen Trapenberg Frick, and David Ragland Bicycle Infrastructure that Extends beyond the Door: examining investments in bicycle-oriented design through a qualitative survey of commercial building owners and tenants February 2011, UCTC-FR-2011-03 Related policy brief: PB-2011-05: Why Do Building Owners Invest in Bicycle-Oriented Design?
27. Gan, Qijian, Jielin Sun, Wenlong Jin, and Jean-Daniel Saphores Incorporating Vehicular Emissions into an Efficient Mesoscopic Traffic Model: An Application to the Alameda Corridor, CA February 2011, UCTC-FR-2011-02 Related policy brief: PB-2011-04: Estimating Emissions Using an Integrated Traffic Model
28. Deakin, Elizabeth, Karen Trapenberg Frick, and Kevin M. Shively Markets for Dynamic Ridesharing? Case of Berkeley, California February 2011, UCTC-FR-2011-01
29. Marsden, Greg, Karen Trapenberg Frick, Anthony D. May and Elizabeth Deakin How do cities approach policy innovation and policy learning? A study of 30 policies in Northern Europe and North America November 2010, UCTC-FR-2010-35 See related research in Good Practice in the Exploitation of Innovative Strategies in Sustainable Urban Transport: City Interview Synthesis 2009, Summer 880
30. Kanafani, Adib, and Jiangchuan Huang Securing linked transportation systems: economic implications and investment strategies November 2010, UCTC-FR-2010-34

**Table 2: Policy Briefs Published 2010-2011**

1. PB-2011-06: Zen in the Art of Travel Behavior: Riders Use Their Cameras to Talk about Their Transit Experience By Camille N. Y. Fink and Brian D. Taylor, University of California, Los Angeles Based on UCTC Faculty Research Paper FR-2011-04
2. PB-2011-05: Why Do Building Owners Invest in Bicycle-Oriented Design? By Phyllis Orrick, Karen Trapenberg Frick, and David Ragland, University of California, Berkeley Based on UCTC Faculty Research Paper FR-2011-03
3. PB-2011-04: Estimating Emissions Using an Integrated Traffic Model By Qijian Gan, Jielin Sun, Wenlong Jin, and Jean-Daniel Saphores, University of California, Irvine. Based on UCTC Faculty Research Paper FR-2011-02.
4. PB-2011-03: Synchronizing Transit Schedules to Reduce Transfer Times and Operating Cost By Samer Madanat and Michael Cassidy, University of California, Berkeley. Based on UCTC Faculty Research Paper FR-2010-19.
5. PB-2011-02: Mass Transit & Mass: Densities Needed to Make Transit Investments Pay Off By Erick Guerra and Robert Cervero, University of California, Berkeley. Based on UCTC Faculty Research Paper FR-2010-32.
6. PB-2011-01: Charge It: The Promise of Plug-in Electric Hybrids, W.W. Recker and J.E. Kang, University of California, Irvine, University of California, Irvine. Based on UCTC Faculty Research Paper FR-2010-14.
7. PB-2010-04: Health Impacts of Moving Freight In and Out of the Ports of Long Beach and Los Angeles, Gunwoo Lee, Soyoung (Iris) You, Mana Sangkapichai, Stephen G. Ritchie, Jean-Daniel Saphores, Oladele Ogunseitan, Roberto Ayala, R. Jayakrishnan, Rodolfo Torres, University of California, Irvine. Based on UCTC Faculty Research Paper FR-2010-08.

## 6. FINANCIAL STATUS

It is UCTC's longstanding policy to commit all funds authorized by our sponsors, the US Department of Transportation and the California Department of Transportation, in the year that they are authorized. If funds are not fully expended in the year they are allocated, they may be carried over into the next fiscal year with the permission of the UCTC Director. Carry-over funds remain committed to the categories to which they were initially allotted, except for Headquarters funds, which differ in some cases from amounts initially budgeted because of changes in salaries or expense items, or reallocations of administrative budget amounts to research and technology transfer accounts. Table 3 shows the committed allocations of the budget for 2010-2011. The \$2,085,000 funded by U.S. DOT matched by \$2,085,000 from Caltrans yielded a total budget of \$4,170,000.

**Table 3. Allocated Amounts for Year 23: UCTC Budget for 2010-11**

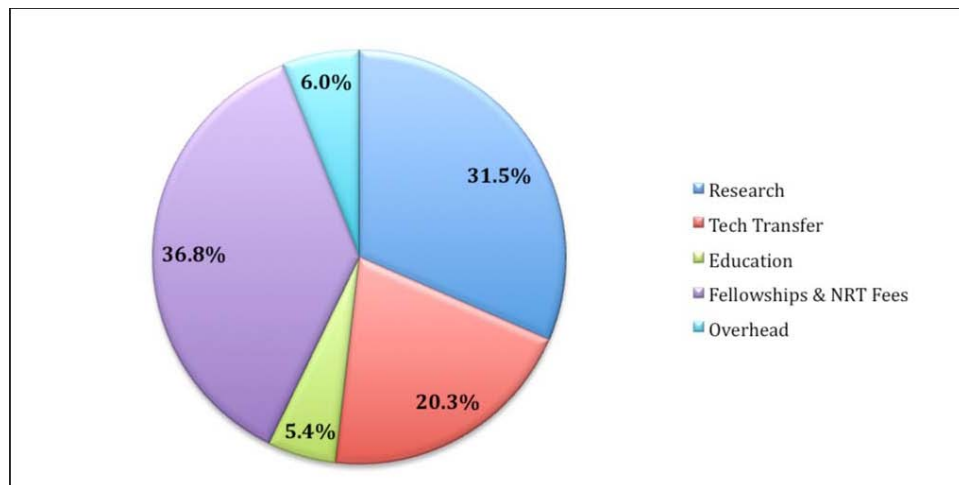
ITEM	USDOT	Caltrans	SUM
Faculty Salaries	\$337,778	\$319,482	\$657,260
Other Staff Salaries	\$0	\$212,421	\$212,421
Student Salaries	\$36,494	\$759,786	\$796,280
Staff Benefits	\$2,157	\$63,027	\$65,184
A- SUBTOTAL SALARIES AND BENEFITS	\$376,429	\$1,354,716	\$1,731,145
Scholarships, including student fees and tuition when applicable	\$1,420,000	\$230,047	\$1,650,047
Permanent Equipment	\$0	\$2,000	\$2,000
Expendable Property & Supplies	\$2,796	\$82,937	\$85,733
Domestic Travel	\$30,000	\$60,000	\$90,000
Foreign Travel	\$5,000	\$0	\$5,000
Other Direct Costs (Specify)	\$19,000	\$355,300	\$374,300
B- SUBTOTAL DIRECT COSTS NOT INCLUDING SCHOLARSHIPS ETC	\$56,796	\$500,237	\$557,033
Subtotal All Direct Costs	\$1,853,225	\$2,085,000	\$3,938,225
C-TOTAL SUBJECT TO IND.COSTS	\$433,225	\$0	\$433,225
Facilities & Admin. (Indirect) Costs	\$231,775	\$0	\$231,775
TOTAL COSTS	\$2,085,000	\$2,085,000	\$4,170,000
Percents	50%	50%	100%

## 7. FUNDING SOURCES AND EXPENDITURES

Revenues for UCTC came in equal amounts from US DOT and Caltrans. Expenditures were made in accordance with the submitted budget. All funds were allocated to budgeted categories during 2010-2011.

Exhibit 3 illustrates direct expenditures (committed amounts by allocation category) for UCTC.

**Exhibit 3. UCTC Expenditure Allocations, Year 23 (2010-2011)**





## APPENDIX 1. GLOSSARY

ACCESS - the research magazine published by the University of California  
CAD- computer-aided design  
CALTRANS- the California Department of Transportation  
CE-CERT – the Civil Engineering Center for Engineering Research and Technology at UC Riverside  
CCIT- California Center for Innovative Transportation located at UC Berkeley  
CMA- Congestion Management Agency, special-purpose county-level organizations in California  
CST- Center for a Sustainable California, at UC Berkeley  
CUTC - Council of University Transportation Centers  
EPA- the Environmental Protection Agency  
FHWA- the Federal Highway Administration of the US Department of Transportation (USDOT)  
FTA- the Federal Transit Administration of the US Department of Transportation  
FTE- full-time equivalent (a measure of staffing levels)  
GIS-geographic information science / geographic information systems  
GMS – Global Metropolitan Studies, an interdisciplinary initiative at UC Berkeley  
GSR - graduate student researcher IGS- the Institute of Governmental Studies at UC Berkeley  
ISTEA- the Intermodal Surface Transportation Efficiency Act  
ITS - the Institute of Transportation Studies (branches at the Berkeley, Davis, Irvine, and UCLA campuses)  
IURD - the Institute of Urban and Regional Development at UC Berkeley  
Leonard Center – the Leonard Transportation Center at San Bernardino State University, a UT  
METRANS- the Center for Metropolitan Transportation Studies at the University of Southern California,  
UTC MPO- Metropolitan Planning Organization  
MINETA - Mineta Transportation Institute at San Jose State University, a UTC  
NEXTOR - National Center of Excellence for Aviation Operations Research headquartered at UC Berkeley  
NRT – nonresident tuition  
NSF- National Science Foundation  
OECD- the Organization for Economic Cooperation and Development  
PATH- Program for Advanced Transit and Highways headquartered at UC Berkeley  
PI- Principal Investigator  
RABA - Revenue Aligned Budget Authority  
RITA – the Research, Innovations and Technology Administration of the USDOT  
SAFETEA-LU - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users  
TEA 21- the Transportation Efficiency Act for the 21st Century  
TRB- the Transportation Research Board  
UC- the University of California, a nine-campus public institution  
UCB - the Berkeley campus of the University of California  
UCD - the Davis campus of the University of California  
UCI - the Irvine campus of the University of California  
UCLA- the Los Angeles campus of the University of California  
UCM – the Merced campus of the University of California  
UCR – the Riverside campus of the University of California

UCSB – the Santa Barbara campus of the University of California  
UCSC – the Santa Cruz campus of the University of California  
UCSD – the San Diego campus of the University of California  
UCSF – the San Francisco campus of the University of California  
UCTC- the University of California Transportation Center  
USC - the University of Southern California, a private university  
US DOT- the US Department of Transportation  
UTC Program- the University Transportation Centers Program  
Volvo Center – the Center for Future Urban Transport, a Volvo Center of Excellence located at Berkeley

## APPENDIX 2. PERFORMANCE INDICATORS

UCTC PERFORMANCE INDICATORS FOR FY 2010-11		
<b>RESEARCH SELECTION</b>	TOTAL (10-11)	2006-2007
1. Number of transportation research projects selected for funding	17	14
1a: Number of those projects you consider to be (projects may be included in more than one category):		
Basic research	4	9
Advanced research	1	2
Applied research	15	9
2. Total budgeted costs (direct costs only) for the projects reported above in (1)	\$1,193,249	\$1,165,317
<b>RESEARCH PERFORMANCE</b>		
3. Number of transportation research reports published (UCTC Sponsored only. Papers, Articles, Research Reports only)	52	60
4. Number of transportation research papers presented at academic/professional meetings (UCTC papers only)	76	90
<b>EDUCATION</b>		
5. Number of courses offered that you consider to be part of the transportation curriculum Note: Report courses shown in the university campus catalog offered, whether or not they were conducted during the academic year being reported. This is for the 5 campuses with formal transport degree programs	84	90
Undergraduate	16	20
Graduate	68	70
6. Number of students participating in transportation research projects. Count individual students (ex: 1 student participating in 2 research projects counts as 1 student)	324	310
Undergraduate	133	90
Graduate	191	220
<b>HUMAN RESOURCES</b>		
7. Number of advanced degree programs offered that you considered transportation-related	48	28
Masters	26	14
Ph.D.	22	14
8. Number of students enrolled in those transportation-related degree programs	251	150
Masters	145	110
Ph.D.	106	40
9. Number of students who received degrees through those transportation-related degree programs.	106	90
Masters	86	80
Ph.D.	20	10
<b>TECHNOLOGY TRANSFER</b>		
10. Number of transportation seminars, symposia, distance learning classes, etc. conducted for transportation professionals	36	4
11. Number of transportation professionals participating	1081	1500